Search for Wide Stellar and Substellar Companions Around Radial Velocity Planet Host Stars

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We will present an overview of our ongoing project, *Search for wide stellar and substellar companions around radial velocity planet host stars.* A brown dwarf or stellar companion in a planetary system could interact with the planets and could have an influence on planet formation. Furthermore, it could be possible that the frequency of planet formation is different in single stellar systems and in multiple stellar systems. The idea of this project is to search for these, so far unknown, (sub)stellar companions around all of the radial velocity planet host stars to learn more about their influence on extrasolar planets and planet formation. We conduct our project in the near infrared with direct imaging techniques, using the 3.5-m NTT and 3.8-m UKIRT. The first step in our project is the measurement of the proper motion of the detected companion candidates, to find out which of them are moving with the host stars. Co-motion is the most important hint on the companionship. In a follow-up observation, we will take spectra of the co-moving objects to determine their spectral type. Up to now, all targets in the northern sample have been observed twice. The second epoch observation for the southern sample is on the way. The high astrometric precision and the high sensitivity of the detectors being used makes it feasible to find faint wide companions and measure there proper motion with only one year of epoch difference. So far several new wide co-moving companions could be identified and follow-up spectroscopy is on the way. The long-time stability region for further, so far unknown, planets in those special planetary systems can be derived using the star and companion mass as well as the companion separation.